① $x^2+2x+1=0$

$\left.\begin{array}{l} a=1 \\ b=2 \\ c=1 \end{array}\right\}$ $x=\dfrac{-b\pm\sqrt{b^2-4ac}}{2a}$

$x=\dfrac{-2\pm\sqrt{2^2-4\cdot1\cdot1}}{2\cdot1}=\dfrac{-2\pm\sqrt{4-4}}{2}=\dfrac{-2\pm\sqrt{0}}{2}=$

$=\dfrac{-2\pm0}{2}=\dfrac{-2}{2}=-1 \Longrightarrow \boxed{x_1=x_2=-1}$

② $x^2+x+1=0$

$\left.\begin{array}{l} a=1 \\ b=1 \\ c=1 \end{array}\right\}$ $x=\dfrac{-b\pm\sqrt{b^2-4ac}}{2a}$

$x=\dfrac{-1\pm\sqrt{1^2-4\cdot1\cdot1}}{2\cdot1}=\dfrac{-1\pm\sqrt{1-4}}{2}=\dfrac{-1\pm\sqrt{-3}}{2}$

$=\dfrac{-1\pm\sqrt{-3}}{2}$ → $\dfrac{-1+\sqrt{-3}}{2}$, $\dfrac{-1-\sqrt{-3}}{2}$

$\boxed{x_1=\dfrac{-1+\sqrt{-3}}{2}}$

$\boxed{x_2=\dfrac{-1-\sqrt{-3}}{2}}$

③ $2x^2-7x+3=0$

$\left.\begin{array}{l} a=2 \\ b=-7 \\ c=3 \end{array}\right\}$ $x=\dfrac{-b\pm\sqrt{b^2-4ac}}{2a}$

$x=\dfrac{-(-7)\pm\sqrt{(-7)^2-4\cdot2\cdot3}}{2\cdot2}=\dfrac{7\pm\sqrt{49-24}}{4}=\dfrac{-7\pm\sqrt{25}}{4}=$

$=\dfrac{-7\pm5}{4}$ → $\boxed{x_1=\dfrac{-7+5}{2}=-1}$, $\boxed{x_2=\dfrac{-7-5}{2}=-6}$

④ $x^2 - 5x - 84 = 0$

$\left.\begin{array}{l} a = 1 \\ b = -5 \\ c = -84 \end{array}\right\}$ $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \dfrac{-(-5) \pm \sqrt{(-5)^2 - 4 \cdot 1 \cdot (-84)}}{2 \cdot 1} = \dfrac{5 \pm \sqrt{25 + 336}}{2} =$

$= \dfrac{-5 \pm \sqrt{361}}{2}$ → $\dfrac{-5+19}{2} = 7$; $\dfrac{-5-19}{2} = -12$

$\boxed{x_1 = 7}$

$\boxed{x_2 = -12}$

⑤ $2x^2 + 3x - 27 = 0$

$\left.\begin{array}{l} a = 2 \\ b = 3 \\ c = -27 \end{array}\right\}$ $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \dfrac{-3 \pm \sqrt{3^2 - 4 \cdot 2 \cdot (-27)}}{2 \cdot 2} = \dfrac{-3 \pm \sqrt{9 + 216}}{4} =$

$= \dfrac{-3 \pm \sqrt{225}}{4} = \dfrac{-3 \pm 15}{4}$ → $\dfrac{-3+15}{4} = 3$; $\dfrac{-3-15}{4} = \dfrac{-18}{4} = \dfrac{-9}{2}$

$\boxed{x_1 = 3}$

$\boxed{x_2 = \dfrac{-9}{2}}$

⑥ $4x^2 + 7x - 2 = 0$

$\left.\begin{array}{l} a = 4 \\ b = 7 \\ c = -2 \end{array}\right\}$ $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \dfrac{-7 \pm \sqrt{7^2 - 4 \cdot 4 (-2)}}{2 \cdot 4} = \dfrac{-7 \pm \sqrt{49 + 32}}{8} = \dfrac{-7 \pm \sqrt{81}}{8} =$

$= \dfrac{-7 \pm 9}{8}$ → $\dfrac{-7+9}{8} \rightarrow \boxed{x_1 = \dfrac{2}{8} = \dfrac{1}{4}}$; $\dfrac{-7-9}{8} \rightarrow \boxed{x_2 = \dfrac{-16}{8} = -2}$

(7) $x^2 - 10x + 9 = 0$

$\left.\begin{array}{l} a = 1 \\ b = -10 \\ c = 9 \end{array}\right\}$ $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$$x = \frac{-(-10) \pm \sqrt{(-10)^2 - 4 \cdot 1 \cdot 9}}{2 \cdot 1} = \frac{10 \pm \sqrt{100 - 36}}{2} =$$

$$= \frac{10 \pm \sqrt{64}}{2} = \frac{10 \pm 8}{2} \begin{cases} \frac{10+8}{2} = 9 \\ \frac{10-8}{2} = 1 \end{cases}$$

$\boxed{x_1 = 9}$

$\boxed{x_2 = 1}$

(8) $x^2 - 4x + 4 = 0$

$\left.\begin{array}{l} a = 1 \\ b = -4 \\ c = 4 \end{array}\right\}$ $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$$x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4 \cdot 1 \cdot 4}}{2 \cdot 1} = \frac{4 \pm \sqrt{16 - 16}}{2} =$$

$$= \frac{4 \pm 0}{2} = \frac{4}{2} = 2 \longrightarrow \boxed{x_1 = x_2 = \emptyset}$$